P224

Changes of physicochemical properties of brown rice during ageing

Jieun Kwak*, Mi-Ra Yoon, Jeom-Sig Lee, Jeong-Hei Lee, Mi-Jung Kim,
Induck Choi, Tae-Wook Jung, Yong-Hee Jeon, and Sun Lim Kim

Department of Central Area Crop Science, National Institute of Crop Science, Rural Development Administration
Suwon , Kyunggi-do, 16613, Republic of Korea

Abstract

The objective of this study was to determine physicochemical changes in brown rice during ageing condition. Five varieties (*Haiami*, *Ilpum*, *Daecheong*, *Jungwon*, and *Dasan1*) of brown rice were stored at 35°C for 8 weeks. Crude protein and lipid content, seed germination rate, fat acidity, tocol content, TOYO glossiness value, pasting properties, and composition of storage proteins were measured to evaluate its quality during storage. The isomers of tocols (tocopherol and tocotrienols) were quantified using HPLC system, and the pattern of variation in rice storage proteins was examined through electrophoresis of protein extracts. Seed germination rate decreased by 2.7 times, whereas the fatty acid value dramatically increased by 4.8 times after 8 weeks of storage. Toyo glossiness value of cooked milled rice considerably affected by storage period, and the pasting properties of milled rice were also influenced by storage. The final viscosity and breakdown value increased, but setback decreased during storage. In terms of storage protein, proportion of prolamin (14.3 kDa) and globulin (26.4 kDa) increased, whereas percentage of glutelin (34-39 kDa and 21-22 kD) decreased. Furthermore, the contents of total tocol and isomers decreased in stored brown rice.

Keywords: brown rice, storage, physicochemical properties, ageing

Corresponding author*
Jieun Kwak
Address : NICS, RDA, Republic of Korea
Tel and Fax : +82-31-695-0608 / +82-31-695-4085
E-mail : jieun74@korea.kr